DOCUMENT RESUME

ED 037 383 SP 003 595

AUTHOR	Roberson, E. Wayne
TITLE	Effects of Teacher In-Service on Instruction and Learning.
INSTITUTION	EPIC Evaluation Center, Tucson, Ariz.
PUB DATE	[69]
NOTE	16p.
EDRS PRICE	EDRS Price MF-$0.25 HC-$0.90
DESCRIPTORS	Academic Achievement, *Behavioral Objectives, *Classroom Observation Techniques, Disadvantaged Youth, Elementary School Students, Elementary School Teachers, Feedback, *Inservice Teacher Education, Principals, *Reading Achievement, Self Evaluation, Student Attitudes, Teacher Attitudes, *Teacher Behavior
IDENTIFIERS	Edwards Personal Preference Scales, EPIC Attitude Inventory, Flanders Interaction Analysis, Halpin Croft Questionnaire, Robersons Self Appraisal, Stanford Reading Test

ABSTRACT

A study was designed to assess the change in teacher attitudes and methods and student attitudes and achievement as a result of a Teacher Self-Appraisal Inservice Program which included workshops on behavioral objectives, principal-directed teaching skills sessions, and training in Flanders' Interaction Analysis and Roberson's Self-Appraisal. Throughout the year six videotapes were collected on each of 20 teachers; they were coded and interpreted and teachers provided with feedback. Statistical tests were conducted at the end of the year to determine if any significant changes took place in the following data: (1) I/D ratios using data from Flanders' system; (2) percent of time spent in categories 1, 2, and 3 of Flanders' system, in encouraging verbal and nonverbal categories of Roberson's system, in closed method of teaching as opposed to open method of teaching in Roberson's system; (3) student and teacher attitude test scores; and (4) pre-post scores on reading tests, on a semantic differential scale, and on Edwards' Personal Preference Scales. Implications of the findings are that (1) such a program increases the reading achievement of disadvantaged children; (2) writing behavioral objectives at all cognitive and affective levels seems to bring about more change in teacher methods than does training in classroom observation systems; and (3) a teacher's attitude toward the organizational climate of a school may be affected by whether or not he understands the feedback he receives concerning teaching. (JS)

ED037383

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
OFFICE OF EDUCATION

9-4

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL OFFICE OF EDUCATION POSITION OR POLICY.

EFFECTS OF TEACHER IN-SERVICE ON INSTRUCTION AND LEARNING

E. Wayne Roberson
University of Arizona
EPIC Evaluation Center
1034 East Adams
Tucson, Arizona

SP003595

INTRODUCTION

Since 1965, the Orange Unified School District (Orange, California) has been exploring various approaches of teacher in-service training in an attempt to improve instruction and to increase achievement. The district desired to implement an in-service program that met the staff needs and emphasized the classroom utilization of video equipment to record classroom behavior for analysis by the teachers involved.

The results of the 1967-68 Teacher Self-Appraisal Program indicated that the use of video equipment as part of teacher in-service training did assist teachers in modifying their behavior and did increase achievement. The 1968-69 Teacher Self-Appraisal Program was planned in an attempt to identify the effects on teachers of an in-service program that emphasized:

1. use of video equipment in recording classroom behavior,
2. developing and writing behavioral objectives,
3. principal-directed in-service sessions,
4. observing, recording, and analyzing classroom behavior, and
5. teaching skills training.

PROCEDURE

The following program was implemented by the Teacher Self-Appraisal in-service staff:

1. Twenty teachers who worked with disadvantaged children in grades kindergarten through six were selected at the beginning of the semester.
2. The following data were collected from principals, teachers, and students at Esplanade, Jordan, and Killefer Schools:

   Principals
   1. On-Site Survey Form

   Teachers
   1. EPIC Teacher Information Form
   2. Halpin-Croft Questionnaire (Pre/Post)
   3. Semantic Differential (Pre/Post)
   4. Edwards Personal Preference Inventory (Pre/Post)

   Students
   1. EPIC Student Information Form
   2. Michigan Student Attitude Inventory (Pre/Post)

3. Principals of Esplanade, Jordan, and Killefer attended a one-day workshop on Behavioral Objectives at the EPIC Evaluation Center in Tucson, Arizona.

4. A Behavioral Objectives workshop was conducted for teachers of Esplanade, Jordan, and Killefer Schools involving fifty teachers, three principals, and three EPIC staff.

5. In addition to objectives training, the following treatments were given to the teachers and principals of the three schools:

School	Staff	Treatment
Esplanade	1 Principal 7 Teachers	Teaching Skills Sessions Coding Skills: Flanders' Interaction Analysis, Roberson's Self-Appraisal Code Analysis Data Interpretation
Jordan	1 Principal 7 Teachers	Teaching Skills Sessions
Killefer	1 Principal	Coding Skills: Flanders' Interaction Analysis, Roberson's Self-Appraisal Code Analysis Data Interpretation

6. Throughout the year, six video tapes were collected on each teacher.

7. The video tapes were coded and interpreted at the EPIC Evaluation Center and the teachers were provided with the feedback.

8. The principals and teachers were also responsible for keeping a weekly report concerning in-service activities and the amount of time spent writing behavioral objectives.

9. Statistical tests were conducted at the end of the year to determine if any significant change took place in the following data:

   a. I/D ratios using data from Flanders' System,
   b. Per cent of time spent in categories 1, 2, and 3 of Flanders' System,
   c. Per cent of time spent in encouraging verbal and non-verbal categories of Roberson's System,
   d. Per cent of time spent in closed method of teaching as opposed to open methods of teaching in Roberson's System,
   e. Student attitudes using the EPIC Attitude Inventory,
   f. Teacher attitudes using the Halpin-Croft Questionnaire,
   g. Pre-post scores on the Stanford Reading Test,
   h. Pre-post results on selected concepts using a semantic differential scale, and
   i. Pre-post teacher scores on the Edwards Personal Preference Scales.

EVALUATION DESIGN

ESPLANADE

Behavioral Objectives
Teaching Skills
Coding Skills
1. Flanders'
2. Roberson's

Semantic Differential
Edwards Personal
Preference Scale
Halpin-Croft Questionnaire
Stanford Reading Test
EPIC Attitude Inventory

Throughout School Year
1. Log reports from Principal & Teachers
2. Video taping of tchrs.
3. Feedback to teachers

Semantic Differential
Edwards Personal
Preference Scale
Halpin-Croft Questionnaire
Stanford Reading Test
EPIC Attitude Inventory

JORDAN

Behavioral Objectives
Teaching Skills

Semantic Differential
Edwards Personal
Preference Scale
Halpin-Croft Questionnaire
Stanford Reading Test
EPIC Attitude Inventory

Throughout School Year
1. Log reports from Principal and Teachers
2. Video taping of tchrs.
3. Feedback to teachers

Semantic Differential
Edwards Personal
Preference Scale
Halpin-Croft Questionnaire
Stanford Reading Test
EPIC Attitude Inventory

KILLEFER

Behavioral Objectives
Coding Skills
1. Flanders'
2. Roberson's

Semantic Differential
Edwards Personal
Preference Scale
Halpin-Croft Questionnaire
Stanford Reading Test
EPIC Attitude Inventory

Throughout School Year
1. Log reports from Principal and Teachers
2. Video taping of tchrs.
3. Feedback to teachers

Semantic Differential
Edwards Personal
Preference Scale
Halpin-Croft Questionnaire
Stanford Reading Test
EPIC Attitude Inventory

Statistical Analysis of data discussed in step nine of the procedure

OBJECTIVES

OBJECTIVE #1

Teachers participating in the Teacher Self-Appraisal In-Service Program will respond positively toward the organizational climate of the school (organization) as measured by the Halpin-Croft Organizational Climate Description Questionnaire: Form IV.

It was hypothesized that those teachers who participated in the Teacher Self-Appraisal program would respond more positively toward the general organizational climate of the school. Responses were collected on a questionnaire which contained sixty-four statements (i.e., "Administrative paper work is burdensome at this school."). Their responses were indicated on a four-point Likert Scale.

The range of scores was 64-256. The low end of the scale indicates a negativeness toward the schools' organizational climate. The higher end of the scale indicates a positive response. If a person received a score of 160, this would indicate that he responded positively and negatively to an equal number of items.

The analysis included the matching of pre- and post-scores on the instruments by teachers. A dependent t-test was then computed for each school and the total sample of teachers.

Table 1 shows the results of the statistical analysis.

TABLE 1

COMPARISON OF MEAN PRE- AND POST-SCORES ON THE HALPIN-CROFT ORGANIZATIONAL CLIMATE DESCRIPTION QUESTIONNAIRE

School	N	Pre-Mean	Post-Mean	Standard Error	t
Esplanade	6	175.17	175.33	48.49	.02
Jordan	7	198.29	190.43	58.73	-1.02
Killefer	6	200.33	200.50	42.36	.02
Total	19	191.63	188.84	16.02	- .70

The results indicate that no significant changes occurred with respect to the teachers' responses toward the organizational climate of their respective schools.

However, it is interesting to note that although the teachers' responses from Esplanade and Killefer remained relatively stable, the responses of the Jordan teachers did change toward the negative end.

Again, although no cause and effect relationships can be concluded, it is possible that a relationship exists between training in the observing and recording of classroom behavior and teacher response toward organizational climate.

Also, data indicate that the teachers at Esplanade remained on the negative end of the scale on both the pre- and post-administrations of the instrument, while the Killefer teachers remained on the positive end of the scale on both administrations.

Finally, as can be gathered from Table 1, there was not a significant change for the total sample, but the pre- and post-means are below the mean of 196, which indicates that the teachers tended to respond more in a negative fashion toward the items than in a positive fashion.

OBJECTIVE #2

> Teachers participating in the Teacher Self-Appraisal In-Service Program will respond positively toward improving their respective curriculums as measured by the amount of time they spend (1) serving on curriculum and instructional committees, and (2) setting up district curriculum guidelines.

Throughout the school year, the teachers were asked to keep a weekly record of how much time they spent serving on curriculum and instructional committees and setting up district guidelines. The teachers participating in the in-service program spent a total of thirty minutes on these activities.

Although the results look discouraging on the surface, a possible reason for the teachers not spending time serving in the above areas is that they may not have had the opportunity to serve, due to the fact that committees whose purpose was to consider the improvement of curriculum were non-existent. If this was the case, the results seem reasonable.

However, if these committees were available, then the in-service program was not successful in producing a willingness on the part of the teachers to spend time considering how their respective curriculums might be improved.

OBJECTIVE #3

> Teachers participating in the Teacher Self-Appraisal In-Service Program will respond positively toward the content of the in-service program as measured by the amount of time they spend (1) writing behavioral objectives, and (2) meeting with their respective principals for the purpose of discussing and implementing the material presented in the in-service program.

In order to get some indication as to how much time the teachers spent writing behavioral objectives and meeting with their principals to discuss the content of the in-service program, the teachers were asked to keep a weekly account of the time they spent writing behavioral objectives, and the principals were asked to keep a record of how much time they spent meeting with their teachers to discuss the content of the in-service program.

Tables 2 and 3 show the compiled results of the teachers and principals.

TABLE 2

COMPARISON BY SCHOOL OF THE AMOUNT OF TIME SPENT BY THE TEACHERS WRITING BEHAVIORAL OBJECTIVES

	School							
	Esplanade		Jordan		Killefer		Total	
Behavioral Level	Min.	%	Min.	%	Min.	%	Min.	%
Cognitive								
Knowledge	2882	38	870	11	665	22	4417	24
Comprehension	875	11	1145	15	480	16	2500	14
Application	737	10	1540	20	215	7	2492	13
Analysis	385	5	1685	22	390	13	2460	13
Synthesis	275	4	1255	16	465	15	1995	11
Evaluation	637	8	1055	14	360	12	2052	11
Affective								
Receiving	717	9	70	1	150	5	937	5
Responding	709	9	115	1	305	10	1129	6
Valuing	205	4	10	0	10	0	305	2
Organization	160	2	0	0	0	0	160	1
Psychomotor	0	0	0	0	0	0	0	0
Totals	7992	100	7745	100	3040	100	18477	100

TABLE 3

SUMMARY OF THE AMOUNT OF TIME SPENT BY SCHOOL BY THE PRINCIPALS MEETING WITH THE TEACHERS TO DISCUSS CONTENT OF THE IN-SERVICE PROGRAM

	School							
	Esplanade		Jordan		Killefer		Total	
Topic	Min.	%	Min.	%	Min.	%	Min.	%
Objectives	28	3	410	58	360	30	798	28
Roberson's Teacher Self-Appraisal	402	45	0	0	430	35	832	30
Flanders' Interaction Analysis	319	36	0	0	410	34	729	26
Other	145	16	295	42	15	1	455	16
Totals	894	100	705	100	1215	100	2814	100

As for the teachers, the compiled results show that a large amount of time was spent writing objectives at the various behavioral levels. Also, a considerable amount of time was spent by the principals discussing the content of the in-service program. It should be noted, however, that the reason the principal at Jordan did not spend any time discussing the Flanders' and Roberson's Observation Systems

was that the teachers did not receive any training in the observing and recording of classroom behavior during the in-service program.

However, a very interesting relationship tends to exist between the teacher and principal time accounting results. Because the Jordan teachers did not receive any training in classroom observation systems, the principal and teachers had a greater opportunity to discuss behavioral objectives than the teachers and principals at the other two schools.

Consequently, the Jordan principal and teachers spent more time than the other two schools discussing behavioral objectives. This appears to have resulted in more time spent by the Jordan teachers writing objectives at the higher behavioral levels than the teachers at the other two schools. This is somewhat supported by the fact that the teachers at Esplanade and Killefer spent 38% and 22% of their time writing objectives at the knowledge level, while the Jordan teachers spent only 11% of their time at the knowledge level.

OBJECTIVE #4

> Teachers participating in the Teacher Self-Appraisal In-Service Program will apply a range of methods in the classroom in working with disadvantaged students as determined by (1) the interaction analysis I/D ratio, which is the amount of time spent by the teachers in categories 1, 2, 3, and 4 as compared to the amount of time spent in categories 5, 6, and 7 of Flanders' Interaction Analysis System, and (2) the amount of time spent by the teachers in the closed and open methods categories of Roberson's Teacher Self-Appraisal System.

In order to determine if the participating teachers in the in-service program applied a range of methods, samples of their teaching behaviors were collected on video tape throughout the year. The video tapes were then coded using Flanders' and Roberson's observation systems. I/D ratios and percentages of time spent in closed and open methods were computed for each tape. An analysis of variance was then computed on each school's data to determine if any significant change took place in the teacher's behavior during the school year.

Table 4 shows by school and tape the mean I/D ratios and the mean percentage difference in time the teachers spent in a closed method of teaching as opposed to an open method of teaching. The F values from the statistical tests are also reported.

The results indicate that significant differences did occur for the Jordan teachers on the closed and open methods of teaching, while the Killefer teachers had a significant difference on the I/D ratio between their six video tapes. It should be noted that the t-test computed on the I/D ratio of the Jordan teachers was significant at the .1 level.

TABLE 4

School	Tape 1 I/D	Tape 1 Closed Minus Open	Tape 2 I/D	Tape 2 Closed Minus Open	Tape 3 I/D	Tape 3 Closed Minus Open	Tape 4 I/D	Tape 4 Closed Minus Open	Tape 5 I/D	Tape 5 Closed Minus Open	Tape 6 I/D	Tape 6 Closed Minus Open	F I/D	F Closed Minus Open
Esplanade	.38	96	.46	96.29	.43	92.29	.45	80.29					.09	1.86
Jordan	.56	98.29	.44	82.56	.59	93.14	.51	86.29	.34	38.86	.73	87.29	2.25+	5.22**
Killefer	.68	90	.68	81.67	.45	85.33	.55	88.69	1.64	76.67	.84	78	2.82*	.44

*$F_{(.05,\ 5,\ 25)}$ = 2.60, significant at .05 level

**$F_{(.01,\ 5,\ 30)}$ = 3.70, significant at the .01 level

+ significant at the .1 level

It was originally hypothesized that the Esplanade and Killefer teachers would show a larger range of methods in teaching because they were trained in Flanders' and Roberson's systems during the in-service program. The Jordan teachers, acting as the control group, did not experience the training.

However, when one views the results in Table 4, they indicate that the Jordan teachers appeared to show more significant changes in methods between video tapes than did the Esplanade and Killefer teachers.

One might conclude that training in observation systems, such as Flanders' and Roberson's, does not necessarily result in the teachers applying a range of methods in teaching, since the Jordan teachers (who did not experience any training of this type) showed the largest changes in methods.

The next question is: "What might have caused this change in the Jordan teachers?" Although cause and effect relationships cannot be implied, it is interesting to note that, according to the results in Table 2, the Jordan teachers spent more time writing behavioral objectives at the higher behavioral levels than the teachers at the other two schools. The Killefer teachers were next in line in terms of spending more time writing objectives at the higher behavioral level and, as the results indicate, they showed a significant difference in their I/D ratios. The Esplanade teachers who spent 38% in writing objectives at the knowledge level showed no change in methods, according to Flanders' and Roberson's systems.

The conclusion might be drawn that if the objective is to have teachers apply a range of methods in the classroom, learning in observation systems may not be the answer, but instead have the teachers write behavioral objectives at all levels of the cognitive and affective domains and not just at the knowledge level. Consequently, if the assumption can be made that one method of teaching cannot be used to accomplish objectives at the behavioral levels, then the teacher who has a wide range of behavioral objectives to begin with would more than likely have to apply a range of teaching methods in order to accomplish them. In other words, given a wide range of objectives, including all behavioral levels, might automatically lead to a wide application of different teaching methods.

OBJECTIVE #5

Teachers participating in the Teacher Self-Appraisal In-Service Program will show acceptance of the problems and values of disadvantaged students as demonstrated by their responses in categories 1, 2, and 3 of Flanders' Interaction Analysis System and the categories of verbal and non-verbal encouraging expressions of Roberson's Teacher Self-Appraisal Observation System.

It was hypothesized that those teachers participating in the Teacher Self-Appraisal Program would, throughout the year, continually increase their use of categories 1, 2, and 3 of Flanders' Interaction Analysis System and the supporting, helping, and receptive categories of Roberson's Teacher Self-Appraisal System.

The analysis was carried out by first calculating the mean per cent of time the teachers from the three schools used the first three categories of Flanders' System and the verbal and non-verbal encouraging categories of Roberson's System for each video tape.

An analysis of variance was then computed using the results from each school to determine if any significant differences occurred. Table 5 shows, by school and tape, the mean per cent of time the teachers used the previously specified categories of Flanders' and Roberson's Systems. The resulting statistical tests are also reported.

TABLE 5

COMPARISONS OF MEAN PER CENTS FOR CATEGORIES 1, 2, AND 3 OF FLANDERS' INTERACTION ANALYSIS SYSTEM AND VERBAL AND NON-VERBAL ENCOURAGING CATEGORIES IN ROBERSON'S TEACHER SELF-APPRAISAL SYSTEM

	Esplanade	Jordan	Killefer
TAPE #1			
I.A. System	3.73	3.53	4.84
TSA Verbal	51.29	37.86	45.83
TSA Non-Verbal	65.71	69.86	71.16
TAPE #2			
I.A. System	5.12	3.17	3.91
TSA Verbal	71.57	38.71	71.83
TSA Non-Verbal	87.42	70.57	79.16
TAPE #3			
I.A. System	3.32	3.37	3.03
TSA Verbal	62.42	62.86	70.16
TSA Non-Verbal	80.85	84.71	90.16
TAPE #4			
I.A. System	1.80	3.22	2.95
TSA Verbal	63.14	64.86	71.50
TSA Non-Verbal	76.28	75.57	88.16
TAPE #5			
I.A. System		2.35	7.50
TSA Verbal		78.71	74.16
TSA Non-Verbal		74.29	85.16

TABLE 5 (Continued)

	Esplanade	Jordan	Killefer
TAPE #6			
I.A. System		3.64	6.54
TSA Verbal		73.43	74.00
TSA Non-Verbal		71.86	96.83
F			
I.A. System	1.13	.59	1.91
TSA Verbal	2.56	18.77**	8.88**
TSA Non-Verbal	4.97*	1.05	1.73

*$F_{(.05,\ 3,\ 18)}$ = 3.16, significant at .05 level
**$F_{(.01,\ 5,\ 18)}$ = 4.25, significant at .01 level

The results show that no significant change took place in the teachers' use of categories 1, 2, and 3 of Flanders' System. A significant change in the Esplanade teachers' use of the Roberson non-verbal encouraging categories did take place, where the Jordan and Killefer teachers changed significantly on the Roberson verbal encouraging categories.

One can see that the three significant changes which took place resulted from a general increase in the teachers' use of the Roberson verbal and non-verbal encouraging categories from one tape to the next.

It is not apparent why significant changes took place in the Roberson System and not in the Flanders System.

However, a possible reason might be that the definitions of categories 1, 2, and 3 in Flanders' System are more restricting than the definitions of the verbal and non-verbal encouraging categories of Roberson's System. This restriction in definition might tend to limit or decrease the amount of teacher behavior that could be categorized in categories 1, 2, and 3 of Flanders' System, whereas if the definitions were broader, as might be the case in Roberson's System, the teachers would have larger opportunity to use them.

If the above is true, it would be unlikely to expect a change in Flanders' System, since one would be concerned with a very small amount of teacher behavior and, consequently, would have very little opportunity for observing a large significant change.

This notion is somewhat supported by the data in Table 5 since the largest mean per cent reported in Flanders' System was 6.54% of the teachers' verbal behavior.

OBJECTIVE #6

Students of classroom teachers participating in the Teacher Self-Appraisal In-Service Program will respond positively toward objects in the school environment (organization) as measured by the EPIC Attitude Inventory.

It was hypothesized that if the Teacher Self-Appraisal In-Service Program was successful, the participating teachers could change their behavior in the classroom to an extent that this change would produce more positive responses on the part of the children toward such things as school, teacher, school work, and general classroom environment.

The responses of the children were collected using a thirty-four item questionnaire. The answers of the children were indicated on an answer sheet upon which they could circle either "yes" or "no."

Items 10 and 23 were the same and if the child responded differently to these items, he was not used in the statistical analysis. Item 34 was not included in any child's total score since it was used to determine if he was responding to the questions appropriately. If the child indicated that a penny was not worth more than a nickel, he was eliminated from the statistical analysis.

The total range of scores was 0-66. The low end of the scale would indicate a negative response, while the high end of the scale would indicate a positive response. A score of 33 would indicate that a child responded positively and negatively to an equal number of items.

The analysis was carried out by matching each child on his pre- and post-scores on the EPIC Attitude Inventory and then computing a dependent t-test for each school participating in the in-service program.

Table 6 shows the results of the statistical analysis.

TABLE 6

COMPARISON OF PRE- AND POST-MEAN SCORES ON THE EPIC ATTITUDE INVENTORY

School	N	Pre-Mean	Post-Mean	Standard Error	t
Esplanade	116	49.72	50.21	.92	.51
Jordan	77	43.87	37.71	1.84	-4.53*
Killefer	78	51.36	50.91	.96	- .46
Total	271	48.53	46.86	.42	-2.57**

*$t_{(.01,\ 76)}$ = 2.64, significant at .01 level

**$t_{(.05,\ 70)}$ = 1.96, significant at .05 level

The results indicate that a significant positive change did not occur in any of the three schools. However, the children at the Jordan Elementary School did show a significant change in the negative direction.

In addition, when a t-test was computed on the total sample, the results indicated a significant negative change in the childrens responses. However, this change can probably be attributed largely to the result of the Jordan children.

It is interesting to note that the Jordan childrens pre-test scores were lower than the other schools to begin with. It should also be noted that the teachers at Jordan did not receive any training in the observing and recording of classroom behavior, while the other teachers at Esplanade and Killefer did receive training in Flanders' Interaction Analysis System and Roberson's Teacher Self-Appraisal System.

Although no cause and effect relationships can be concluded, the data do suggest that there might be a relationship between teacher training in the observing and recording of classroom behavior and childrens responses to the school environment.

OBJECTIVE #7

Students of classroom teachers participating in the Teacher Self-Appraisal In-service Program will increase their knowledge of reading as determined by their scores on the Stanford Achievement Test.

Although grades K-6 are represented by the participating teachers in the in-service program, only grades 2 and 3 were used to assess the degree to which this objective was accomplished, due to a change in achievement instruments as some children moved from one grade to the next.

Since the achievement data for each school was rather limited for grades 2 and 3, it was not possible to perform the statistical analysis for each school separately. Therefore, dependent t-tests were calculated using all children from the three schools.

Table 7 shows the pre- and post-achievement means for grades 2 and 3, along with the resulting t-tests.

TABLE 7

PRE- AND POST-COMPARISON OF READING ACHIEVEMENT
FOR GRADES 2 AND 3

Grade	N	Pre-Mean	Post-Mean	Standard Error	t
Two	16	24.94	30.75	3.87	2.96*
Three	29	27.79	42.86	3.09	8.56**

*$t_{(15,\ .01\ \text{one-tailed})}$ = 2.60, significant at .01 level

**$t_{(27,\ .02\ \text{one-tailed})}$ = 2.48, significant at .01 level

The results indicate that there was a significant gain in reading achievement for those children in grades 2 and 3 whose teachers were participants in the Teacher Self-Appraisal In-Service Program.

In the school year 1967-68, the achievement of those disadvantaged children who had teachers participating in the Teacher Self-Appraisal Program was compared to the achievement of a control group of middle-class children. The result showed that although the middle-class children were achieving at a higher level, the gap in achievement between the middle-class children and disadvantaged children decreased from the pre-achievement means to the post-achievement means.

In order to determine if the achievement gap was further decreased this year as a result of the Teacher Self-Appraisal Program, a comparison was made between the control group's reading achievement mean and this year's achievement results.

Table 8 shows the pre- and post-means of the control group's reading achievement compared to pre- and post-reading achievement scores of disadvantaged children for the school years 1967-68 and 1968-69.

TABLE 8

PRE- AND POST-READING ACHIEVEMENT COMPARISONS OF CONTROL AND DISADVANTAGED GROUPS FOR 1967-68 and 1968-69

Pre-Means					Post-Means				
Control	Dis. 67-68	Dis. 68-69	Diff. 67-68	Diff. 68-69	Control	Dis. 67-68	Dis. 68-69	Diff. 67-68	Diff. 68-69
GRADE 2:									
15.86	11.23	24.94	4.63	-9.08	27.26	22.36	30.75	4.90	-3.49
GRADE 3:									
27.26	22.36	27.79	4.90	- .53	27.49	21.16	42.86	6.33	-15.37

As the comparisons show, the gap which existed between the control group and disadvantaged children in reading achievement at the end of the 1967-68 school year has completely disappeared during the school year 1968-69 and the disadvantaged children are now achieving at a higher level than the control group.

LIMITATIONS

This study was designed to assess the change in teacher attitudes and methods and student attitudes and achievement as a result of the Orange Unified School District's Teacher Self-Appraisal In-Service Program.

When interpreting the results, the following limitations should be considered:

1. The validity of the measuring instruments,
2. The reliability of the measuring instruments,
3. The probability of making Type I and Type II errors, and
4. The sample size.

The results of this study should only be generalized to that population which the sample was intended to represent.

IMPLICATIONS

Three implications may be derived from this study. First of all, it appears that an in-service program of the type performed in the Orange Unified School District does have an effect of increasing the reading achievement of disadvantaged children.

Secondly, this study has implications for bringing about change in teacher methods. The results show that the writing of behavioral objectives at all cognitive and affective levels seems to bring about more change in teacher methods than training in classroom observation systems such as Flanders' and Roberson's Systems. A study dealing with the effect of training in behavioral objectives and the resultant changes in teachers' methods would seem to be the next step in assessing the effectiveness of the Orange Unified School District's In-Service Program.

It is also interesting to note that a teacher's attitude toward the organizational climate of a school may be affected by whether or not the teacher understands the feedback he receives concerning his teaching. The Jordan teachers seemed to confirm this notion since they had a negative change in attitude toward their organizational climate, while at the same time they received feedback about their teaching which they had a difficult time understanding, due to the fact that they had not experienced any training in the Flanders' and Roberson's Systems. A study to investigate further the effect of feedback on selected teacher variables would seem to be appropriate in the next cycle of evaluating Orange Unified School District's In-Service Program.